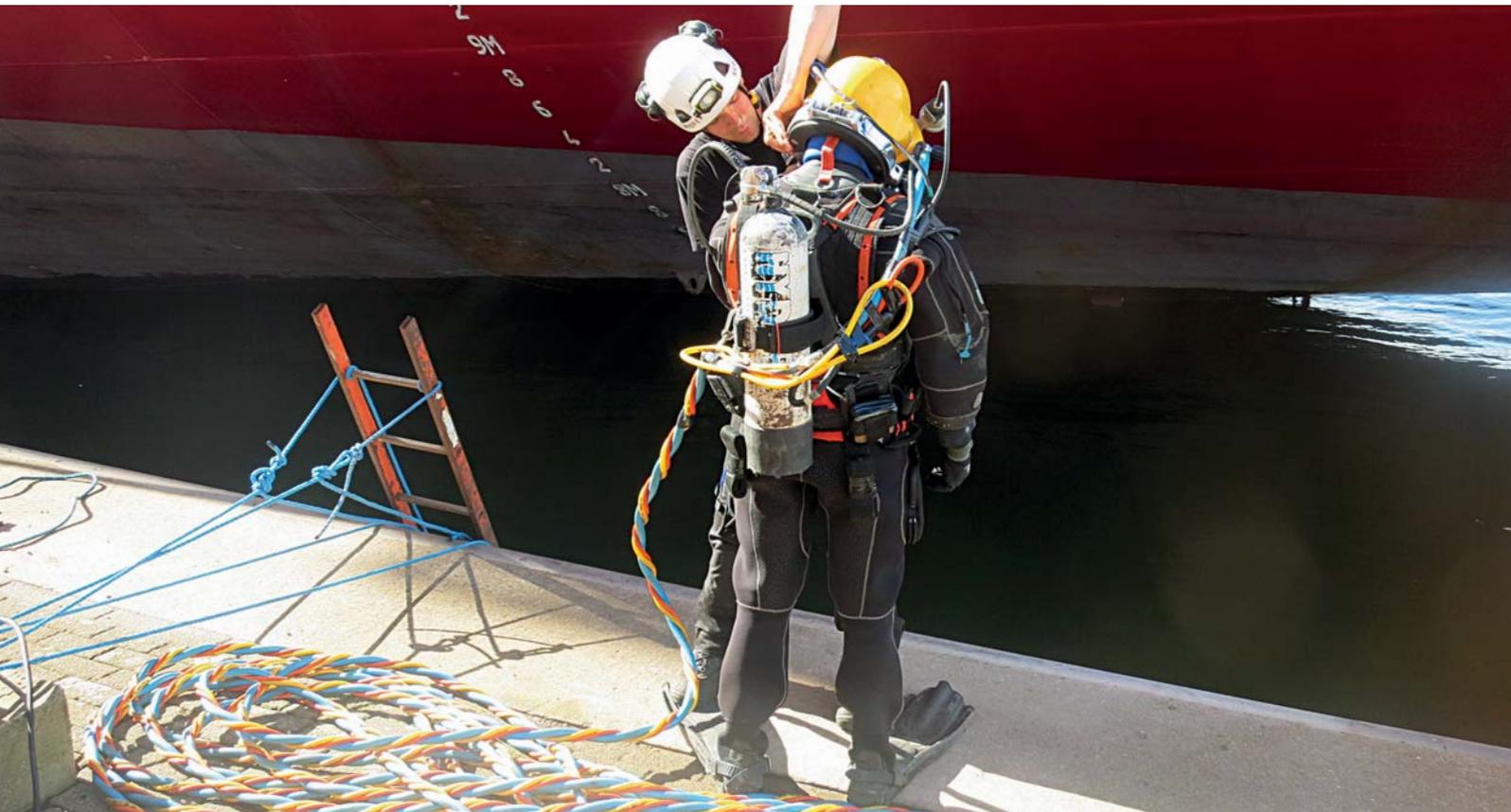


HYDREX[®]

UNDERWATER TECHNOLOGY

Magazine

Number 235



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Hydrex Rotterdam ready to assist you



On the 1st of March the Hydrex office in Rotterdam officially opened. Its purpose is to improve the delivery of our services and underwater expertise to the maritime industry of Rotterdam.

To enable a fast mobilization throughout the entire Rotterdam port without delaying a ship's com-

mercial operations, Hydrex dive support vessels are stationed in Rotterdam. Since the opening these workboats have proved to be a valuable asset during a variety of operations in the port. They are fully equipped with hydraulic cranes, winches, a dive spread and control room.

This allows Hydrex to offer simple maintenance operations as well as

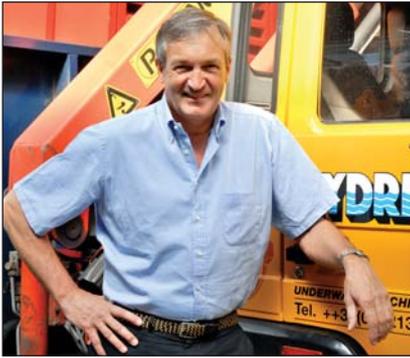
repairs on all parts of the underwater ship propulsion system and the hull. Hydrex operations are class approved and carried out alongside or at anchorage while commercial activities continue without disruption.

Feel free to contact the Rotterdam office if you want to find out how we can assist you and your vessel.

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Editorial



In this magazine we write about several on-site operations carried out by Hydrex diver/technicians. These operations were performed with one purpose in mind: to keep the customer's vessel out of drydock and allow him to keep his ship on schedule.

In June Hydrex and sister company Subsea Industries attended the Posidonia exhibition in Greece. This event was very successful and we are looking forward to working further together with the people we have met. You can read about this event in the last article in this magazine.

Providing a service that is both versatile and effective, Hydrex has built a reputation as the world's leading underwater repair and replacement specialists. With an ever-expanding worldwide network of offices and support bases, we can provide fast service at reasonable costs.

We hope that this magazine will encourage you to contact us if you have a problem or need maintenance work carried out. We can offer fast tailor-made solutions that can keep your vessel on schedule.

If you have a problem with your ship of which you are not sure that it can be solved afloat, you are very welcome to give us a call. We will evaluate the problem and can let you

know whether an underwater solution is possible. Many solutions are available without the need for dry-docking.

Our technical advisors will inform you whether the operation is feasible underwater. We will give you fast and clear answers to your questions.

We can assist you with routine maintenance operations as well as complex repairs. Very simply put: We fix ships.

Hydrex founder
Boud Van Rompay



ISO 9001 certified

Underwater services and technology approved by:



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Fast propeller repair in Germany avoids costly drydocking

Recently a team of Hydrex Diver/technicians performed a propeller blade cropping on a 190-meter container bulker berthed in Hamburg. Two parts of the tip of one of the four propeller blades were damaged and needed to be cropped to restore the propeller's efficiency.

Having developed different procedures for different kinds of damage, Hydrex teams are equipped and trained to make the best out of a bent or broken propeller. Ideally, the in-house developed cold straightening technique is used. This procedure enables Hydrex technicians to straighten damaged blades in-water, allowing commercial operations to continue without the need to drydock.

In the following example cropping was the only option as the type of



One of the propeller blades was missing parts of its tip.

damage to the propeller blade did not allow cold straightening. This kind of repair is carried out with the

propeller blade cutting equipment developed by the Hydrex research department. In cases like this, where there is an even number of blades an identical piece will be cropped from the opposite blade to restore the hydrodynamic balance of the propeller. By doing so, the best possible efficiency is obtained.

Single day operation restores efficiency

One of the four blades of the bulker had lost two parts of its tip. An on-site solution was needed to restore the propeller's balance and efficiency. A team was therefore mobilized from our headquarters in Antwerp to the ship's location in Germany

After the equipment arrived at the vessel's location the team started the



Hydrex team and equipment arriving on-site.



Cutting the opposite blade of the damaged blade to keep the balance.

operation with a detailed survey of the affected propeller blade. The team then used the information acquired during the inspection to calculate and determine the correct measurements needed to modify the trailing edges of the propeller blade. Next the divers cropped the blade and ground its edge to give it the correct radius. The opposing blade

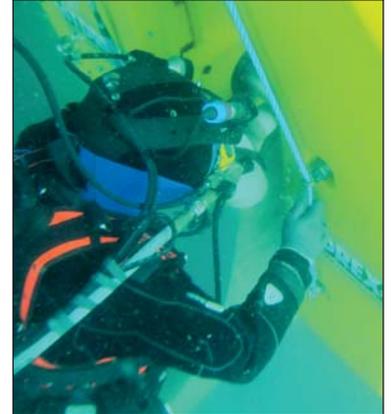
was modified using the exact same cutting line, to give the propeller back its balance.

When the cropping was complete, the Hydrex technicians buffed the blades to make sure that any remaining loss of efficiency would be minimal.



Buffing one of the cropped blades to achieve the best possible efficiency.

Fast underwater propeller blade straightening



In its quest to provide cost effective services to customers, Hydrex developed procedures to address different kinds of damage to propellers. This research led to the design of the Hydrex cold straightening machines first used in 2002.

By taking advantage of this technique damaged blades can be straightened underwater, allowing the ship to return to commercial operations without the need to drydock. Blades can be brought back close to their original form, restoring the propeller's optimum efficiency.

The cold straightening machines have been in use for quite some time now but the Hydrex research department has been looking into ways to expand the technique even further to improve our services. A new version of the straightening machine was recently put into practice. It is compatible with the existing models and is used to restore more severely bent propeller blades to their original condition.



Permanent in-water rudder repairs now possible without drydocking



Hydrex has developed an entirely new method enabling permanent repairs of rudders without drydocking the ship. Permanent repairs were hitherto not possible and ships had to drydock in case a major defect was found. The newly designed equipment is light-weight and can be mobilized very rapidly in our special flight containers. Therefore this new service is now available world-wide.

Major defects on rudders very often cause unscheduled drydocking of ships. The new method designed by our technical department allows engineers, welders and inspectors to perform their tasks in dry conditions. Class approved permanent repairs on-site, without moving the ship, are now possible and commercial operations can continue. Steel repairs and replacements can be performed and pintle and bushing defects can be solved without the loss of time and money associated with drydocking.

The equipment can be mobilized within hours to any port in the world and is available for rapid mobilization from the Hydrex headquarters in Antwerp.



Cropped and buffed propeller blade.

Conclusion

Over forty years of experience with propeller repairs have given us the tools and know-how to offer fast repair and modification services to vessels around the world. All types of operations can be carried out fast, fluently and efficiently afloat and underwater.

In this case the repair took less than a day. This prevented any unwelcome delay to the vessel's schedule. ■

**KEEPING SHIPS
IN BUSINESS**



Testing one of the cropped blades for cracks.

Stern tube seal repairs



Using our flexible mobdock method to create a dry underwater environment, we have carried out stern tube seal repairs and replacements underwater for some years now in cooperation with OEMs.

This technology brings drydock

conditions to the ship rather than having to take the ship to drydock, saving a considerable amount of time and money in doing so.

This class accepted method is performed by our diving teams under our warranty. It can be used while the ship is carrying out its

usual cargo or other commercial operations in port.

Visit the special stern tube seal repair section on our website for more information and examples of the many seal repairs we have performed in recent years.



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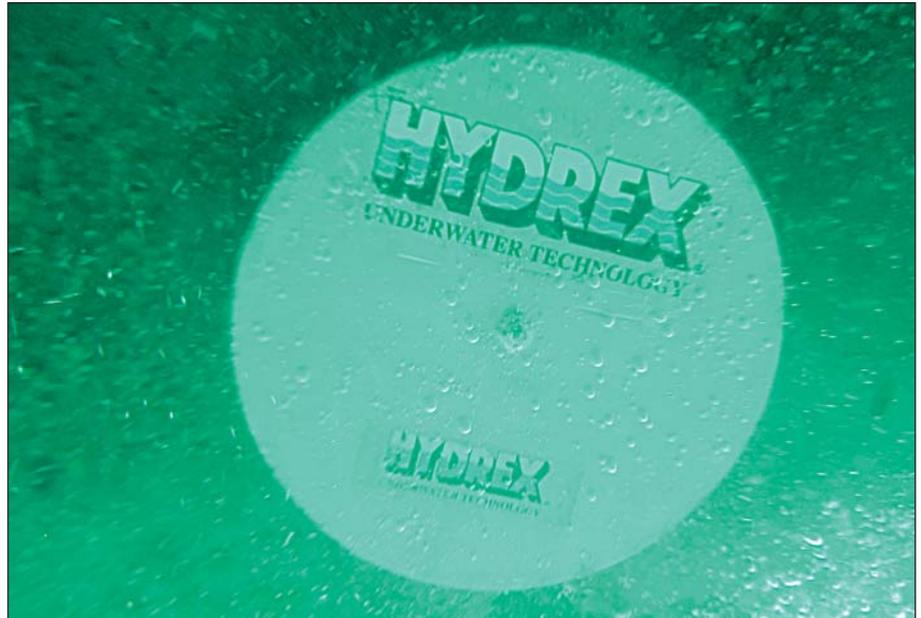
www.hydrex.be



Class approved underwater shell plating replacement in Antwerp

A tanker suffered corrosion damage to the shell plating of one of its fuel tanks. In June we mobilized with one of our dive-support workboats to the vessel's location in Antwerp to perform a class approved permanent underwater insert repair. This allowed the owner to keep his ship on schedule.

A week earlier, during the ship's brief stop in Algeciras, a temporary blank had been installed by Hydrex Spain. They also performed a detailed inspection of the affected area and took the required measurements to modify the cofferdam that would be used to seal off the damage. This allowed the vessel to sail safely to Antwerp where the available time frame was slightly larger and a



Temporary blank installed by Hydrex Spain.

permanent repair could be performed.

We have a large stock of equipment

and materials available in our fast response centers. As a result, one of our cofferdams could be modified very swiftly in-house. It was trans-



Inspection of the damaged area prior to the operation.



New insert positioned and secured.



Fully welded insert.



Independent ultrasonic tests were carried out on the weld seams.

Hydrex US ready to mobilize immediately



Hydrex has an office located in Clearwater in the Tampa Bay area that is ready to mobilize immediately. The office has a fast response center that is equipped with an extensive range of state of the art logistics, trucks, tools and diving support equipment. This enables Hydrex US to efficiently service vessels and offshore units calling on ports in Canada, North, Central and South America as well as the Caribbean.

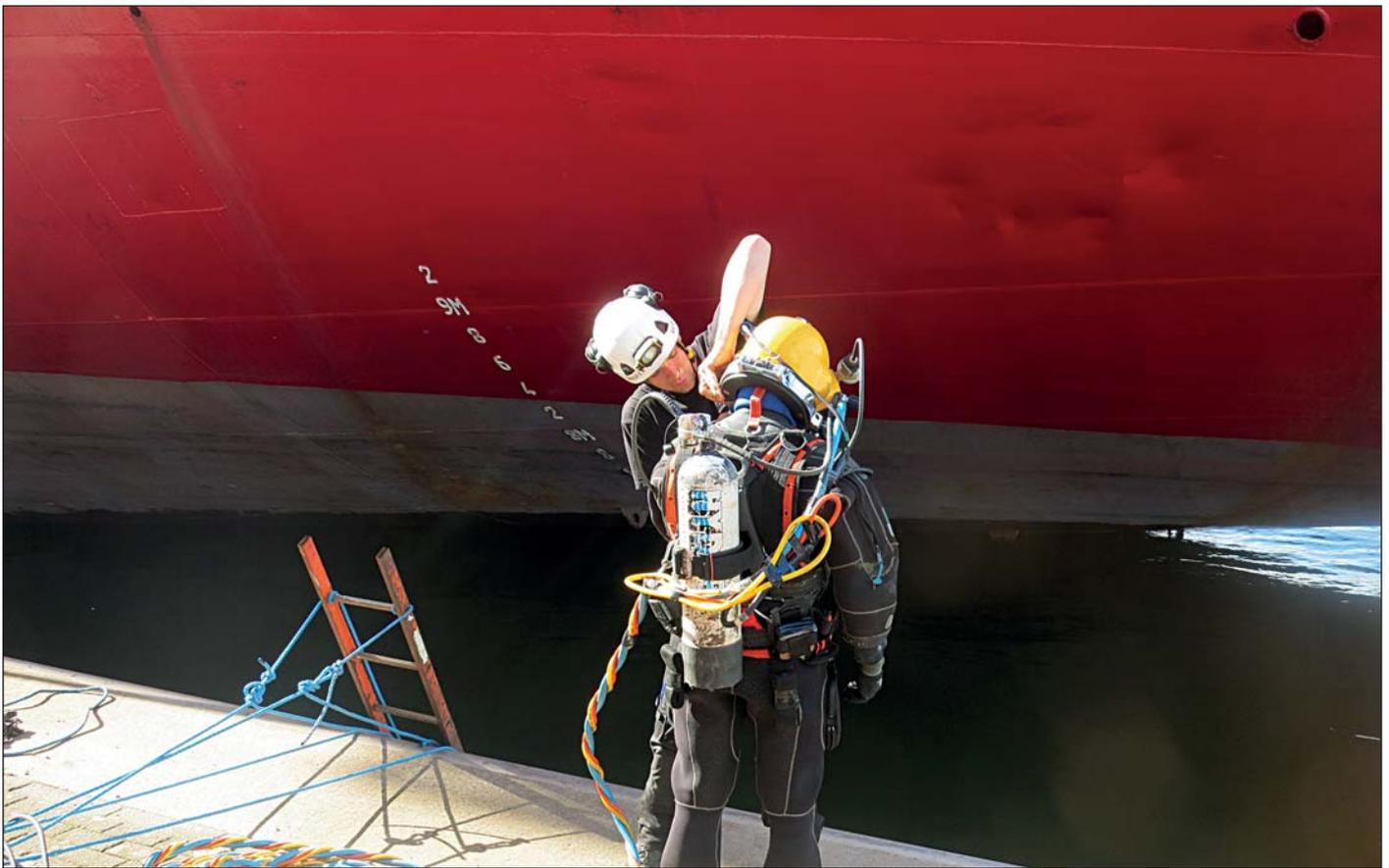
All staff members of the Hydrex office in Clearwater undergo stringent training at the Hydrex headquarters in Antwerp. They can carry out both simple and complex high quality jobs even in the harshest of circumstances.

Repairs to thrusters, propellers, rudders, stern tube seals, damaged or corroded hulls and all other underwater repair as well as maintenance services are done while the vessel is afloat. This eliminates the need to drydock.

All used methods are fully approved by all major classification societies.

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Hydrex diver/technician getting ready to install the cofferdam.

ported to the ship with one of our fully equipped dive-support vessels immediately after the tanker arrived in Antwerp.

The repair operation started with the removal of the temporary blank and the installation of the cofferdam

over the waterside of the damaged area.

The team then cut away the damage and the surrounding area. Next they positioned a round insert plate, with a diameter of 300mm. The insert was then welded following the

Hydrex class-approved procedure for insert plates, using a full penetration weld.

An independent inspector carried out ultrasonic testing and the repair was approved by the classification surveyor who was present during the operation. The diver/welders then removed the cofferdam, concluding the repair.

Conclusion

We have the know-how and experience needed to find the best solution for any problem you might encounter with your vessel, whether a simple routine repair is needed or a unique complex one. As illustrated by this case, we can easily adapt a repair to your schedule. If required we can split up an operation and perform it in parts on different locations. Our goal is to keep you sailing with as little delay as possible. ■



New insert seen from the waterside.

Underwater bow thruster removal in stages avoids loss of income

A Hydrex diver/technician team removed a bow thruster unit which needed to be overhauled from a 363-meter container vessel. The removal itself was carried out in Rotterdam. Earlier the team had already prepared the thruster tunnel during the ship's stop in Le Havre, France. This allowed the divers to perform the operation underwater in a very short time frame without interrupting the vessel's schedule.

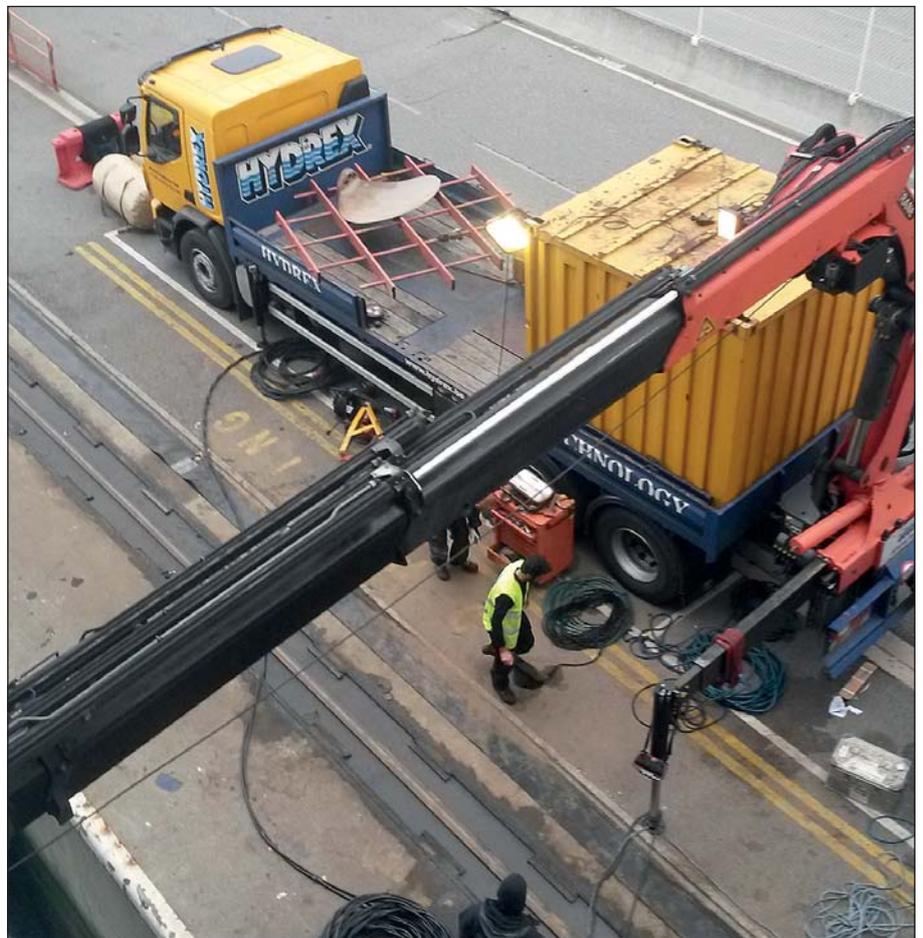
Preparations in Le Havre

Because of the ship's tight schedule in Rotterdam, the time required to remove the thruster unit needed to be brought back to the absolute minimum. For this reason a Hydrex team mobilized to the vessel while it was berthed in Le Havre to perform all possible preliminary work. This included removing the thruster blades one by one and preparing the engine room and the bow thruster tunnel for the operation.

When the preliminary work was complete, the team returned to the company's headquarter in Antwerp. As soon as the container vessel was entering the Rotterdam port, the team mobilized again, using one of the Hydrex workboats loaded with all the needed equipment. The Hydrex catamarans are fully equipped as dive support stations with hydraulic cranes, winches, nautical and communication equipment and a dive control room. They can be used for a wide range of



Hydrex diver/technician team approaching container vessel in Rotterdam.



Hydrex truck with thruster tunnel grid and thruster blade in Le Havre.

Hydrex under-water inspections



Underwater inspections are an essential aspect of ship repairs. Building upon conventional technical skills and know-how while also taking advantage of the latest technology, Hydrex offers a unique hull monitoring service to its customers. This gives ship owners total control of the underwater hull and the underwater gear of their vessels. An informed decision can then be made concerning any required follow-up action. Catching problems early can save much time and money.

Hydrex diver/technicians can carry out inspections underwater and on-site very swiftly without disturbing the vessel's sailing schedule.

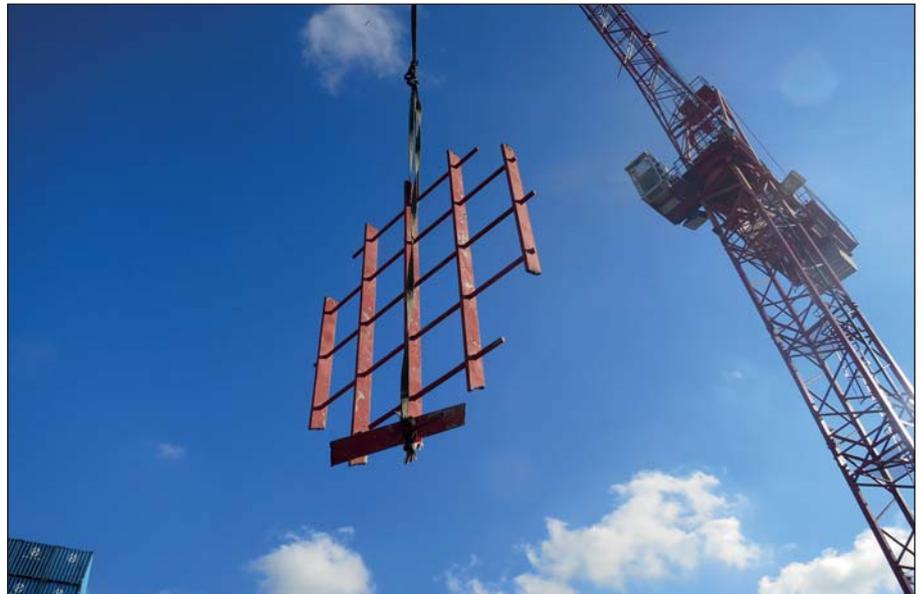
With fuel costs amounting to 40% of operational expenses and continuing to rise, reducing fuel consumption is a vital concern of ship owners. This is the reason why hull monitoring pays for itself. Underwater hull roughness, marine fouling, bent propellers and poor paint condition are all factors that will increase fuel usage due to the drag or inefficiency created by the damaged or affected area. The data gathered can then be used for a wide range of actions.

Our diver/technicians are trained for a wide range of operations and they can carry out the inspections in port or at anchor anywhere in the world.

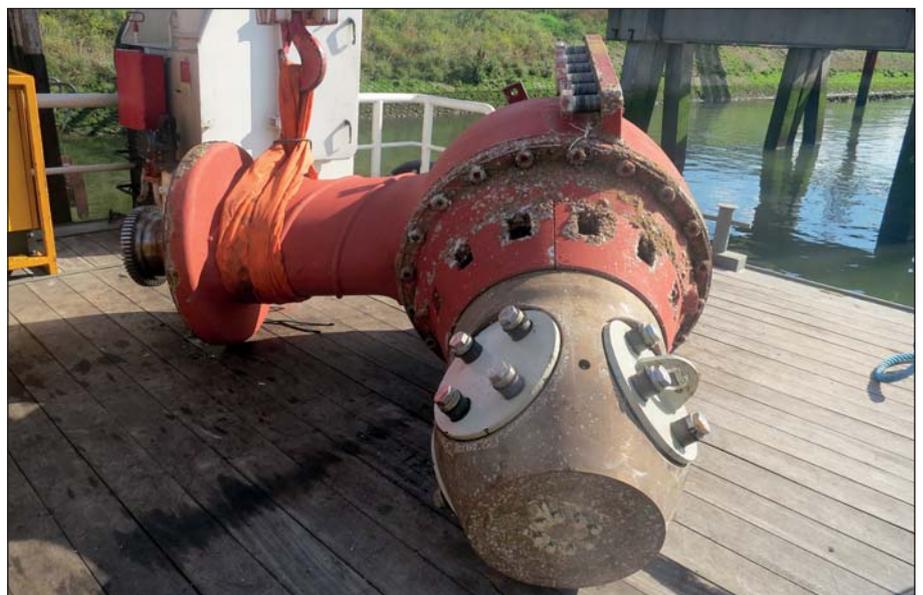
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Bow thruster unit lifted out of the water.



Thruster tunnel grid brought to shore.



Thruster unit on Hydrex workboat.



The Hydrex team delivered the thruster unit to the manufacturer in Rotterdam.

operations in Belgium, the Netherlands, the United Kingdom and France, permitting even more rapid deployment from Antwerp or Rotterdam. This increases flexibility of operations, which was essential during an operation like this where only a tight time frame was available.

Rapid removal of the thruster unit in Rotterdam

After the diver/technicians arrived on-site, they secured the gearbox with hoisting equipment. The team then disconnected the bow thruster unit from the engine room and lowered it onto a cradle. This cradle was designed especially for thruster operations.

The bow thruster was then brought onboard the Hydrex workboat. Next the team securely sealed off the engine room by positioning a flange over the space connecting the thruster tunnel to the room. This made it possible for the vessel to continue to sail while the unit was onshore being overhauled.

With the bow thruster unit on deck the team sailed the Hydrex workboat to the manufacturer.

Off-hire time causes a substantial loss of money. It was therefore very important that the ship could keep its schedule. Performing the removal in two stages allowed this. This kind of flexibility can only be achieved successfully by staff who have familiarity with such operations and have the relevant knowledge and equipment. Hydrex has a technical department capable of executing all the required planning. Our diver/technicians are trained and qualified to perform the full range of required class-approved repair procedures in even the harshest conditions. ■



Hydrex workboat in Rotterdam.

Hydrex and Subsea Industries at Posidonia 2016



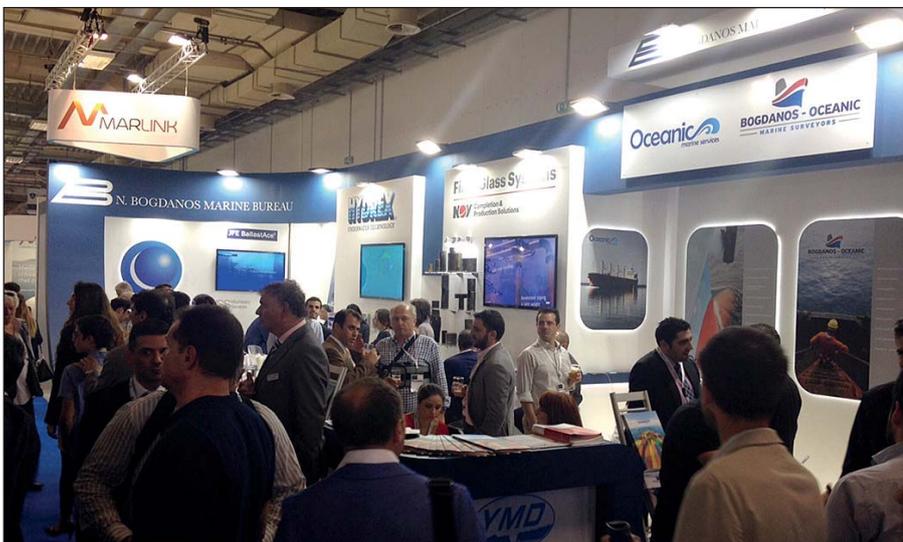
In June Hydrex and Subsea Industries took part in Posidonia 2016, together with our agent for Greece: N. Bogdanos Marine Bureau. The exhibition was a very successful one for everyone involved and we are already looking forward to the next edition.

The event set new records in terms of exhibitor floor space, size of conference program and number of visitors. In total, 1.825 exhibiting companies from 90 countries and territories and 19 national pavilions welcomed 22.366 visitors from over 95 countries to their stands.

According to the exhibition's post-event press release, Posidonia 2016 has received overwhelming praise from exhibitors and visitors who unanimously agree that this year's edition of the event has also been the



Subsea Industries Production Executive Manuel Hof (2nd from the left) during the second day of the Posidonia Exhibition, which was a very busy and fruitful one. On the right you can see Ms. Alexia Bogdanos, the CEO of N. Bogdanos Marine Bureau with Mr. Iraklis Tarlas, the Head of Sales.



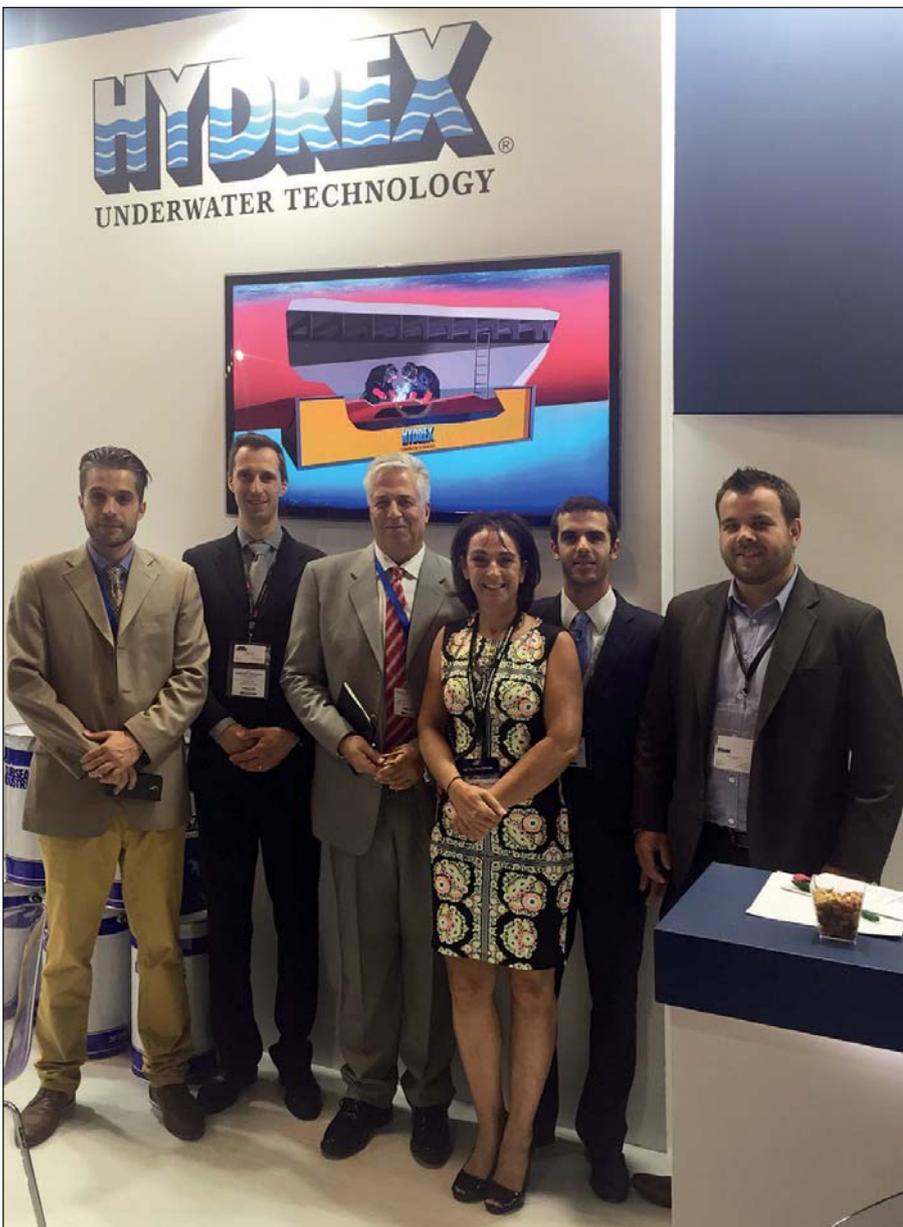
The N. Bogdanos booth attracted a large crowd throughout the entire exhibition.

most distinguished in the show's five-decade long history.

“We always strive to make the best even better by constantly reinventing the overall offering of Posidonia seeking to further improve and if possible perfect the experience on and off the main venue of the exhibition,” said Theodore Vokos, Executive Director, Posidonia Exhibitions S.A, the organizers of the event.



According to Hydrex Sales Officer Steven De Keyzer (seen on the right in the picture) Posidonia 2016 was very successful.



Manuel Hof, Steven De Keyzer and the N. Bogdanos team posing before the start of a very busy day at Posidonia 2016.

Hydrex Sales Officer Steven De Keyzer was present during the four days of the event. He told us that the N. Bogdanos booth was crowded from start to finish, with many networking chances presenting themselves throughout the four days of the exhibition. “Posidonia 2016 was very satisfying for us. I was able to speak with a great number of interesting people from the shipping world,” said Steven. “New business opportunities have been discussed and existing relationships have been strengthened.”

We would like to thank all of you who visited us there for coming and look forward to working with you on an ongoing basis. We would also like to invite you to come and visit us during SMM 2016 at the Holland Pavilion in Hall B7, booth 426.

If you have received this magazine at the wrong address or if your company is going to move, please let us know.

You can contact us at:
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 or at
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Keeping ships in business

Hydrex offers turnkey underwater repair solutions to ship-owners wherever and whenever they are needed. Hydrex's multi-disciplinary team will help you find the best solution for any problem encountered with your ship below the water line. We will immediately mobilize our diver/technicians to carry out necessary repair work without the need to drydock.

Hydrex has a long track record of

performing complex permanent underwater repairs to thrusters, propellers, rudders, stern tube seals and damaged or corroded hulls. By creating drydock-like conditions around the affected area, our diver/technicians can carry out these operations in port or at anchor.

All the projects we undertake are engineered and carried out in close cooperation with the customer and any third party suppliers, relieving

the customer of all the hassle of coordination, planning and supervision.

Headquartered in the Belgian port of Antwerp, we have offices in Rotterdam, Tampa (U.S.A) and Algeciras (Spain).

All Hydrex offices have fully operational fast response centers where an extensive range of state-of-the-art equipment is available at all times.



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